Tahoe Sierra IRWMP

Attachment #7

Economic Analysis – Water Supply Costs and Benefits

t: Project 1 - Community Watershed Planning - Tahne Resource Conservation Di

YEAR Grand Total Cost From Table 7 (P) (Claim Clai		Initial Costs		ď	perations and Ma	Operations and Maintenance Costs ⁽¹⁾	(1)		Discounting	Discounting Calculations
Grand Total Cost From Table Town Admin Operation Maintenance Replacement Replacement Total Costs Total Costs Discount Factor (a) + +++++++++++++++++++++++++++++++++	Grand Total Cost From Table Town Admin Operation Maintenance Replacement Replacement Other Costs Discount Factor Table Table Town (I), column(d)) Store		(a)	(p)	(c)	(p)	(e)	(J)	(6)	(h)	(1)
\$450,000 \$0 <	\$450,000 \$0 \$0 \$0 \$0 \$1000 <th>YEAR</th> <th>Grand Total Cost From Table 7 (row (i), column(d))</th> <th>Admin</th> <th>Operation</th> <th>Maintenance</th> <th>Replacement</th> <th>Other</th> <th>Total Costs (a) ++ (f)</th> <th>Discount Factor</th> <th>Discounted Costs(g) x (h)</th>	YEAR	Grand Total Cost From Table 7 (row (i), column(d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a) ++ (f)	Discount Factor	Discounted Costs(g) x (h)
\$0 \$0<	\$0 \$0<	2009	\$450,000	80	80	80	So	\$0	\$450,000	1.000	\$450,000
\$0 \$0<	50 50 50 50 50 50 6.890 0.890 50 50 50 50 50 50 50 0.840 50 50 50 50 50 50 50 0.792 50 50 50 50 50 50 50 0.742 50 50 50 50 50 50 50 0.742 50 50 50 50 50 50 50 0.742 50 50 50 50 50 50 50 0.742 50 50 50 50 50 50 50 0.745 50 50 50 50 50 50 50 0.745 50 50 50 50 50 50 50 50 0.745 50 50 50 50 50 50 50 0.745 <t< td=""><td>2010</td><td>80</td><td>80</td><td>\$0</td><td>80</td><td>80</td><td>80</td><td>80</td><td>0.943</td><td>80</td></t<>	2010	80	80	\$0	80	80	80	80	0.943	80
50 50 50 50 50 50 6.40 6.40 50 50 50 50 50 50 6.777 6.777 50 50 50 50 50 50 50 6.747 50 50 50 50 50 50 50 6.747 50 50 50 50 50 50 50 6.747 50 50 50 50 50 50 50 6.747 50 50 50 50 50 50 50 6.777 50 50 50 50 50 50 50 6.777 50 50 50 50 50 50 50 6.777 50 50 50 50 50 50 50 6.777 50 50 50 50 50 50 50 6.727 50 <	Signature Sign	2011	80	80	80	\$0	80	80	80	0.890	80
80 80 80 80 80 90<	Signature Sign	2012	80	SO SO	S0	\$0	SO	80	80	0.840	0\$
\$0 \$0<	SO SO SO SO SO SO SO SO	2013	80	80	SO	\$0	80	80	80	0.792	08
\$0 \$0<	SO SO SO SO SO SO SO SO	2014	80	80	\$0	80	80	80	80	0.747	80
50 50<	50 50 50 50 50 50 665 50 60<	2015	80	80	SO SO	\$0	\$0	80	\$0	0.705	08
\$0 \$0<	\$0 \$0<	2016	80	80	SO	\$0	\$0	80	80	0.665	80
80 80<	80 80 80 80 80 80 60 50 80 80 80 80 80 80 60.558 80 60.558 80 60.558 80 60.558 80 60.527 80 60.527 80 60.527 80 60.497 80 60.497 80 60.497 80 60.497 80 60.497 80 60.497 80 60.497 80 60.497 80 60.497 80 60.497 80 60.497 80 60.497 80 60.497 80 60.497 80 60.497 80 60.497 80 60.497 80 60.442 80 60.442 80 60.442 80 60.442 80 60.442 80 60.442 80 60.442 80 60.442 80 80 60.442 80 80 60.442 80 80 60.442 80 80 80 80 80 80 80 80 </td <td>2017</td> <td>80</td> <td>80</td> <td>So</td> <td>80</td> <td>SO</td> <td>80</td> <td>80</td> <td>0.627</td> <td>08</td>	2017	80	80	So	80	SO	80	80	0.627	08
\$0 \$0<	\$0 \$0<	2018	80	80	80	\$0	80	80	80	0.592	OS SO
80 80<	\$0 \$0<	2019	So	80	So	\$0	\$0	So	80	0.558	08
80 80 80 80 80 80 80 90<	SO SO SO SO SO SO 6497 SO SO SO SO SO SO 0.449 SO SO SO SO SO SO 0.442 SO SO SO SO SO SO 0.442 SO SO SO SO SO SO 0.417 SO SO SO SO SO SO 0.341 SO SO SO SO SO SO 0.350 SO SO SO SO SO SO 0.204 SO SO SO SO SO SO 0.204 SO SO SO SO	2020	80	\$0	SO	80	80	80	80	0.527	80
\$0 \$0<	\$0 \$0<	2021	80	80	80	\$0	80	80	80	0.497	08
\$0 \$0<	\$0 \$0<	2022	80	\$0	\$0	80	80	So	80	0.469	SO SO
80 80<	\$0 \$0 \$0 \$0 \$0 \$0 \$17	2023	SO	\$0	\$0	80	80	80	So	0.442	OS SO
\$0 \$0<	\$0 \$0<	2024	80	80	80	SO	\$0	. SO	SO SO	0.417	08
\$0 \$0<	\$0 \$0<	2025	80	80	80	SO	80	\$0	80	0.394	80
\$0 \$0<	\$0 \$0<	2026	80	80	\$0	SO	80	80	OS SO	0.371	80
\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$312 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0312 \$0 \$0 \$0312 \$0 \$0 \$0312 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0.331 \$0 \$0 \$0 \$0 \$0 \$0 \$0.312 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0.312 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0.294 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0.294 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0.294 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0.278 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	2027	80	80	80	SO	\$0	\$0	80	0.350	80
\$0 \$0 \$0 \$0 \$0 \$0 \$12 \$0<	S0 S0 S0 S0 S0 S0 S0 S0	2028	80	80	\$0	80	\$0	\$0	80	0.331	OS SO
\$0 \$0<	S0 S0 S0 S0 S0 S0 S0 S0	2029	80	80	\$0	SO	80	\$0	80	0.312	80
\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0.278 Total Present Value of Discounted Costs (Sum of Column (i))	2030	80	80	\$0	\$0	80	80	SO SO	0.294	80
	Total Present Value of Discounted Costs (Sum of Column (i))	2031	\$0	80	\$0	80	80	\$0	80	0.278	80
	Total Present Value of Discounted Costs (Sum of Column (i))	ect Life									

Total Present Value of Discounted Costs (Sum of Column (i))

Transfer to Table 20, column (c), Exhibit F: Proposal Costs and Benefits Summaries

Comments: There are no operations and maintenance costs beyond the two years of project implementation as these costs will fall on the program recipients.

Initial Costs	(b) (c) (d) (e) (f) (g) (h) Discounting C. Admin Operation Maintenance Replacement Other Total Costs Discount Factor \$0 \$0 \$1,000 \$0 \$0,943 \$0 \$0,0943 \$0 \$0,0943 \$0 \$0,0943 \$0 \$0,0943 \$0 \$0,0943 \$0 \$0,0943 \$0 \$0,0947 Transfer to Table 20, column (c), Exhibit F: Proposal Costs and Benefits Summaries			Proj	(All costs should be in 2009 Dollars) ect: Project 2 - Water Quality Monitoring Program	ater Quality Monit	Project: Project 2 - Water Quality Monitoring Program - Town of Truckes	own of Truckee			
(b) (c) (d) (e) (f) (g) (h) Admin Operation Maintenance Replacement Other Total Costs Discount Factor \$0 \$0 \$1.000 <	(b) (c) (d) (e) (f) (g) (h) (h)		Initial Costs		ō	perations and Ma	aintenance Costs	0,		Discounting	Calculations
Admin Operation Maintenance Replacement Other Total Costs Discount Factor \$0 \$0 \$1.000	Admin Operation Maintenance Replacement Other Total Costs Discount Factor \$0 \$0 \$778,750 1.000 0.943 0.0943 0.0943 0.0943 0.080 0.080 0.080 0.080 0.080 0.0840 0.0792 0.0792 0.0747		(a)	(p)	(c)	(p)	(e)	(j)	(6)	(h)	0
\$0 \$778,750 1.000 \$0 0.943 \$0 0.943 \$0 0.840 \$0 0.840 \$0 0.792 \$0 0.747 Transfer to Table 20, column (c), Exhibit F: Proposal Costs and Benefits Summaries	\$0		Grand Total Cost From Table 7 (row (i), column(d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a) ++ (f)	Discount Factor	Discounted Costs(g) x (h)
So 0.943 So 0.890 So 0.890 So 0.890 So 0.840 So 0.792 So 0.747 So So So So So So So S	S0 0.943 S0 0.890 S0 0.890 S0 0.890 S0 0.840 S0 0.792 S0 0.747		\$778,750	80					\$778,750	1.000	\$778,750
S0 0.890 S0 0.840 S0 0.840 S0 0.840 S0 0.840 S0 0.792 S0 0.792 S0 0.747 S0 0.747	S0 0.890 S0 0.840 S0 0.840 S0 0.840 S0 0.792 S0 0.747		80						\$0	0.943	\$0
S0 0.840 0.840 0.792 0.792 0.747 0	\$0 0.840 0.792 0.792 0.747 0	100000	\$0						\$0	0.890	\$0
0 0.792 0 0.792 0 0.747 0 0.747 0 0.747 0 0.747 0 0.747 0 0.747 0 0.747 0 0.747 0 0.747 0 0.747 0 0.747 0 0.747 0 0.747 0 0.747 0 0 0.747 0 0 0 0 0 0 0 0 0	0 0.792	1000	\$0						\$0	0.840	\$0
Transfer to Table 20, column (c), Exhibit F: Proposal Costs and Benefits Summaries	0 0.747	10000	0						0	0.792	0
		10000	0						0	0.747	. 0
		IN ESTROPORTOR				Transfer to 1	Total P Table 20, column (c	resent Value of D	iscounted Costs (Sum of Column (i)) enefits Summaries	

Table 11- Annual Cost of Project (All costs should be in 2009 Collars) Project: Project 3 - Little Truckee River Restoration Project - Sierra County

	Initial Costs		Na in the same of		intenance Costs (1			Discounting	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
YEAR	Grand Total Cost From Table 7 (row (i), column(d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a) ++ (f)	Discount Factor	Discounted Costs(g) x (
2009	BALLANIA - TEURNAMERINA		日本語の日の元素				\$0	1.000	\$0
2010	Beautiful Land Control Control					TOTAL STATE	\$0	0.943	\$0
2011	Processing and the second	A CONTRACTOR		And the same of the			\$0	0.890	\$0
2012	\$8,000		\$22,000	\$80	THE REPORT OF THE PARTY OF		\$30,080	0.840	\$25,267
2013	\$2,090,794		\$22,000	\$5,227	A CALL THE CALL IN		\$2,118,021	0.792	\$1,677,47
2014	92,000,704	THE RESIDENCE OF THE PARTY.	\$22,000	\$5,227			\$27,227	0.747	\$20,339
2015		DE LA CASCILIA DI POSSO	\$22,000	\$5,227	Electrical and a control of	SASTAN SALES	\$27,227	0.705	\$19,195
2016			\$22,000	\$5,227	EAST TEST TO SECURE STATE OF		\$27,227	0.665	\$18,106
2017		\$1,000.00	\$22,000	\$5,227			\$28,227	0.627	\$17,698
2018		\$1,000.00	\$22,000	\$5,227			\$27,227	0.592	\$16,118
2019		CONTRACTOR OF THE	\$22,000	\$5,227			\$27,227	0.558	\$15,193
2020			\$22,000	\$5,227			\$27,227	0.527	\$14,349
2021			\$22,000	\$5,227		BANK BUT AND	\$27,227	0,497	\$13,532
2022		\$1,000.00	\$22,000	\$5,227			\$28,227	0.469	\$13,238
2022		\$1,000.00	\$22,000	\$5,227	THE RESIDENCE OF STREET OF STREET		\$27,227	0.442	\$12,034
2023			\$22,000	\$5,227			\$27,227	0.417	\$11,354
				\$5,227			\$27,227	0.394	\$10,727
2025			\$22,000				\$27,227	0.371	\$10,727
2026		61 000 00	\$22,000	\$5,227	The second secon		\$28,227	0.35	\$9,879
2027		\$1,000.00	\$22,000	\$5,227				0.331	\$9,879
2028			\$22,000	\$5,227			\$27,227		
2029	S DESIGN BESIDE HAND BUSINES		\$22,000	\$5,227	TORRESCAPE VALUE OF		\$27,227	0.312	\$8,495
2030			\$22,000	\$5,227			\$27,227	0.294	\$8,005
2031		BEEN CHUICHNIC	\$22,000	\$5,227	Marie Control of the		\$27,227	0.278	\$7,569
2032		\$1,000.00	\$22,000	\$5,227			\$28,227	0.262	\$7,395
2033	A MUSEUM REPORT OF THE PROPERTY OF THE PROPERT		\$22,000	\$5,227		Marin Manual A	\$27,227	0.247	\$6,725
2034			\$22,000	\$5,227			\$27,227	0.233	\$6,344
2035			\$22,000	\$5,227		ARTICON CONTRACTOR	\$27,227	0.22	\$5,990
2036	Participant of the Participant		\$22,000	\$5,227		ON THE STREET	\$27,227	0.207	\$5,636
2027		\$1,000.00	\$22,000	\$5,227	DATE OF THE PARTY OF		\$28,227	0.196	\$5,532
2038	Commission of the Commission of the		\$22,000	\$5,227	TOTAL PROPERTY OF		\$27,227	0.185	\$5,037
2039		SE BANK THEFT	\$22,000	\$5,227	Britania Carrier		\$27,227	0.174	\$4,737
2040			\$22,000	\$5,227	Approximate the second of the	CALLO DESTRUCTION	\$27,227	0.164	\$4,465
2041	Markey Burgers Burger	Held beautiful to the	\$22,000	\$5,227	EDITOR OF STREET		\$27,227	0.155	\$4,220
2042		\$1,000.00	\$22,000	\$5,227			\$28,227	0.146	\$4,121
2043			\$22,000	\$5,227	\$8,000.00		\$35,227	0.138	\$4,861
2044			\$22,000	\$5,227	NAME OF TAXABLE PARTY.	A STATE OF THE STA	\$27,227	0.13	\$3,540
2045	Service short series		\$22,000	\$5,227	Burney States of the B		\$27,227	0.123	\$3,349
Project Life			Established St.	CATEGORY P. C.	THE PERSON NAMED IN			(Sum of Column (i))	\$2,009,63

Comments:

(All costs should be in 2009 Dollars)
Project: Project 4 - Negro Canyon Restoration Project - Truckee River Watershed Council

YEAR (a) (b) (c) (d) (e) (f) (g) (h) YEAR Grand Total Cost From Table 7 Admin Operation Maintenance Table 7 Replacement Total Costs Discount Factor (a) ++(f) Inscount Factor (b) ++(f) Inscount Fac		Initial Costs		ło	perations and Ma	Operations and Maintenance Costs (1)	(1)		Discounting	Discounting Calculations
Grand Total Cost From Table 7 Admin Operation Ma (row (i), column(d)) \$0 \$0 \$554,355 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0		(a)	(p)	(c)	(p)	(e)	(£)	(6)	(h)	0
\$554,355 \$0 \$0 \$0 \$0 \$0 0 \$0 \$0	YEAR	Grand Total Cost From Table 7 (row (i), column(d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a) ++ (f)	Discount Factor	Discounted Costs(g) x (h)
80 80 80 0 80 80 0 90 80	2011	\$554,355	\$0	\$0	80	80	80	\$554,355	0.890	\$493,376
08 08 0	2012	80	80	\$0	80	80	80	\$0	0.840	0\$
08 08 0	2013	0	\$0	\$0	OS SO	80	\$0	\$0	0.792	0\$
	2014	0	\$0	\$00	80	\$0	\$0	\$0	0.747	0\$
Transfer to Table 20. column (c). Exhibit F: Proposal Costs and Benefits Summaries	Project Life					があるというない				
					Transfer to	Total P Table 20, column (resent Value of D	iscounted Costs (S	Sum of Column (i)) enefits Summaries	\$493,376

Comments: 1) Inisitable is being completed for the negro carryon restoration rioject, a project with water quanty benefits, so that for use in Table 20 Project Costs and Benefits Summary. 2) 2012 add 2013 costs are included in the Grand Total Cost from Table 7.

Project: Project 5 - Water Conservation - South Tahoe Public Utility District (and other agencies)

YEAR Geat of Table Cost From Table Transity (e) (f)		Initial Costs		ŏ	perations and Ma	Operations and Maintenance Costs (1)	B		Discounting Calculations	carculations
Crand Total Cost From Admin Operation Maintenance Replacement Other Total Costs Discount Factor Table 7		(a)	(p)	(c)	(p)	(e)	(4)	(6)	(f)	()
\$275,502 \$0 \$0 \$0 \$0 \$275,502 \$1,000 \$20 \$0 \$0 \$0 \$0 \$275,502 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 <td< th=""><th>YEAR</th><th>Grand Total Cost From Table 7 (row (i), column(d))</th><th>Admin</th><th>Operation</th><th>Maintenance</th><th>Replacement</th><th>Other</th><th>Total Costs (a) ++ (f)</th><th>Discount Factor</th><th>Discounted Costs(g) x (h)</th></td<>	YEAR	Grand Total Cost From Table 7 (row (i), column(d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a) ++ (f)	Discount Factor	Discounted Costs(g) x (h)
\$275,502 \$0 <	2009	\$275.502	80	80	80	So	\$0	\$275.502	1.000	\$275.502
\$0 \$0<	2010	\$275,502	\$0	\$0	80	80	\$0	\$275,502	0.943	\$259,798
\$0 \$0<	2011	80	80	80	\$0	80	\$0	80	0.890	\$0
50 50 50 50 50 50 50 50 50 50 50 50 50 50 50 50 50 60 747 70	2012	80	80	\$0	\$0	80	80	\$0	0.840	80
State	2013	80	\$0	\$0	\$0	80	\$0	\$0	0.792	\$0
State	2014	80	80	80	80	08	\$0	80	0.747	\$0
\$0 \$0<	2015	0\$	80	80	80	80	\$0	80	0.705	80
\$0 \$0<	2016	80	80	80	80	80	80	80	0.665	- \$0
\$0 \$0<	2017	80	80	80	80	80	80	0\$	0.627	80
\$0 \$0<	2018	- \$0	80	\$0	- \$0	80	80	0\$	0.592	80
\$0 \$0<	2019	0\$	\$0	80	80	\$0	\$0	80	0.558	80
\$0 \$0<	2020	0\$	80	80	80	80	80	80	0.527	80
\$0 \$0<	2021	0\$	80	80	80	\$0	\$0	80	0.497	80
\$0 \$0<	2022	0\$	- 80	80	80	80	80	08	0.469	80
\$0 \$0 \$0 \$0 \$0 \$0 \$17	2023	80	0\$	80	80	80	\$0	80	0.442	80
\$0 \$0<	2024	0\$	80	80	80	80	\$0	80	0.417	80
\$0 \$0<	2025	80	80	80	80	\$0	\$0	80	0.394	80
\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 </td <td>2026</td> <td>80</td> <td>80</td> <td>80</td> <td>80</td> <td>80</td> <td>\$0</td> <td>0\$</td> <td>0.371</td> <td>80</td>	2026	80	80	80	80	80	\$0	0\$	0.371	80
\$0 \$0<	2027	80	80	. SO	80	80	80	0\$	0.35	80
\$0 \$0 \$0 \$0 \$0 \$0 \$12 \$0<	2028	80	80	80	80	\$0	\$0	80	0.331	80
S0 S0 S0 S0 S0 O.294	2029	0\$	80	80	80	80	\$0	80	0.312	80
S0 S0 S0 0.278	2030	0\$	0\$	80	80	80	\$0	80	0.294	80
Transfer to Table 20 column (c) Exhibit E- Proposal Costs and Benefits Summaries	2031	80	80	80	80	\$0	\$0	80	0.278	\$0
	roject Life									
					Transforto	Total Pr	esent Value of D	Discounted Costs (9	Sum of Column (i))	\$535,300

Table 12 - Annual Water Supply Benefits
(All benefits should be in 2009 dollars)
Project: Project 5 - Water Conservation - South Table Public Utility District (and other agencies)

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Year	Type of Benefit	Measure of	Without Project	With Project	Change	Unit \$ Value	Annual \$ Value	Discount Factor	Discounted
		Benefit			Resulting from				Benefits
					Project				
		(Units)			(e) – (d)		(f) x (g)		(h) x (i)
						(1)	(1)	(1)	(1)
2009				oden i de la como			\$0 \$0	1.000	\$0
2010	Tout Doubank	aallawa	0	2 666 422	2.666.422	50,002	\$6,133	0.943	\$0
2011	Turf Buyback HE Toilet	gallons gallons	0	2,666,422 1,537,380	2,666,422 1,537,380	\$0.002 \$0.002	\$3,536	0.890 0.890	\$5,458 \$3,147
	He Clothes	gallons	0	172,910	172,910	\$0.002	\$398	0.890	\$354
	Washer								
	Customer Leak	gallons	0	1,622,500	1,622,500	\$0.002	\$3,732	0.890	\$3,321
	Repair	CARL AFE	1010 English		Park High Charles		ASSESSED FOR		
2012	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.002	\$12,266	0.840	\$10,303
	HE Toilet He Clothes	gallons gallons	0	3,074,760 345,821	3,074,760 345,821	\$0.002 \$0.002	\$7,072 \$795	0.840 0.840	\$5,940 \$668
	Washer	ganons		343,821	343,621	90.002	3775	0.040	3000
F-1-24-6-6	Customer Leak	gallons	0	3,245,000	3,245,000	\$0.002	\$7,464	0.840	\$6,269
	Repair								
2013	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.002	\$12,266	0.792	\$9,714
	HE Toilet	gallons	0	3,074,760	3,074,760	\$0.002	\$7,072	0.792	\$5,601
	He Clothes	gallons	0	345,821	345,821	\$0.002	\$795	0.792	\$630
	Washer Customer Leak	gallons	0	3,245,000	3,245,000	\$0.002	\$7,464	0.792	\$5,911
	Repair	ganons	"	3,243,000	3,243,000	30.002	37,404	0.792	33,911
2014	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.002	\$12,266	0.747	\$9,162
The state of the	HE Toilet	gallons	0	3,074,760	3,074,760	\$0.002	\$7,072	0.747	\$5,283
	He Clothes	gallons	0	345,821	345,821	\$0.002	\$795	0.747	\$594
	Washer						Market Street		
	Customer Leak	gallons	0	3,245,000	3,245,000	\$0.002	\$7,464	0.747	\$5,575
2015	Repair Turf Buyback		0	5,332,844	5,332,844	\$0.002	\$12,266	0.705	\$8,647
2015	HE Toilet	gallons gallons	0	3,074,760	3,074,760	\$0.002	\$7,072	0.705	\$4,986
	He Clothes	gallons	0	345,821	345,821	\$0.002	\$795	0.705	\$561
	Washer								
	Customer Leak	gallons	0	3,245,000	3,245,000	\$0.002	\$7,464	0.705	\$5,262
	Repair	The state of the							
2016	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.002	\$12,266	0.665	\$8,157
	HE Toilet He Clothes	gallons gallons	0	3,074,760 345,821	3,074,760 345,821	\$0.002 \$0.002	\$7,072 \$795	0.665 0.665	\$4,703 \$529
	Washer	ganons		343,621	343,621	\$0.002	3/93	0.005	3329
	Customer Leak	gallons	0	3,245,000	3,245,000	\$0.002	\$7,464	0.665	\$4,963
	Repair			0.000					
2017	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.002	\$12,266	0.627	\$7,690
	HE Toilet	gallons	0	3,074,760	3,074,760	\$0.002	\$7,072	0.627	\$4,434
	He Clothes	gallons	0	345,821	345,821	\$0.002	\$795	0.627	\$499
	Washer Customer Leak	gallons	0	3,245,000	3,245,000	\$0.002	\$7,464	0.627	\$4,680
	Repair	ganons		3,243,000	3,243,000	30,002	37,404	0.027	\$4,080
2018	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.002	\$12,266	0.592	\$7,261
	HE Toilet	gallons	0	3,074,760	3,074,760	\$0.002	\$7,072	0.592	\$4,187
	He Clothes	gallons	0	345,821	345,821	\$0.002	\$795	0.592	\$471
DESCRIPTION AND A	Washer		Manager Manager	2.045.000	2.242.003	60.000	COLUMN TO A COLUMN	0.505	\$4.410
	Customer Leak	gallons	0	3,245,000	3,245,000	\$0.002	\$7,464	0.592	\$4,418
2019	Repair Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.002	\$12,266	0.558	\$6,844
2019	HE Toilet	gallons	0	3,074,760	3,074,760	\$0.002	\$7,072	0.558	\$3,946
No. of Parties	He Clothes	gallons	0	345,821	345,821	\$0.002	\$795	0.558	\$444
	Washer	All Section of the Section		SO A REGIONAL SE			19270 (1930)	District Control	
	Customer Leak	gallons	0	3,245,000	3,245,000	\$0.002	\$7,464	0.558	\$4,165
2020	Repair	GEOGRAPHICA CONTRACTOR		6.222.011	6.222.044	60,000	610.066	0.607	56.464
2020	Turf Buyback HE Toilet	gallons gallons	0	5,332,844 3,074,760	5,332,844 3,074,760	\$0.002 \$0.002	\$12,266 \$7,072	0.527 0.527	\$6,464 \$3,727
	He Clothes	gallons	0	345,821	345,821	\$0.002	\$7,072	0.527	\$419
	Washer	Builons		343,021	545,021	20.002			
PAGE SULTE	Customer Leak	gallons	0	3,245,000	3,245,000	\$0.002	\$7,464	0.527	\$3,933
	Repair	Maria Salari							
2021	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.003	\$15,999	0.497	\$7,951
	HE Toilet	gallons	0	3,074,760	3,074,760	\$0.003	\$9,224	0.497	\$4,584
	He Clothes	gallons	0	345,821	345,821	\$0.003	\$1,037	0.497	\$516
	Washer Customer Leak	gallons	0	3,245,000	3,245,000	\$0.003	\$9,735	0.497	\$4,838
	- Customer Leak	Kanons	The second secon	3,243,000	3,243,000	\$0.003	49,133	0.49/	94,000

2022	Turf Buyback HE Toilet He Clothes	gallons gallons gallons	0 0	5,332,844 3,074,760	5,332,844 3,074,760	\$0.003 \$0.003	\$15,999 \$9,224	0.469 0.469	\$7,503 \$4,326
	He Clothes			a decree of the last of the la	3,074,760	\$0.003	\$9,224	0.469	
		gallons	0						
	Washer		0	345,821	345,821	\$0.003	\$1,037	0.469	\$487
	Customer Leak Repair	gallons	0	3,245,000	3,245,000	\$0.003	\$9,735	0.469	\$4,566
2023	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.003	\$15,999	0.442	\$7,071
2023	HE Toilet	gallons	0	3,074,760	3,074,760	\$0.003	\$9,224	0.442	\$4,077
11121111	Customer Leak	gallons	0	3,245,000	3,245,000	\$0.003	\$9,735	0.442	\$4,303
	Repair								
2024	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.003	\$15,999	0.417	\$6,671
	HE Toilet	gallons	0	3,074,760	3,074,760	\$0.003	\$9,224	0.417	\$3,847
	Customer Leak Repair	gallons	0	3,245,000	3,245,000	\$0.003	\$9,735	0.417	\$4,059
2025	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.003	\$15,999	0.394	\$6,303
	HE Toilet	gallons	0	3,074,760	3,074,760	\$0.003	\$9,224	0.394	\$3,634
	Customer Leak Repair	gallons	0	3,245,000	3,245,000	\$0.003	\$9,735	0.394	\$3,836
2026	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.003	\$15,999	0.371	\$5,935
	HE Toilet	gallons	0	3,074,760	3,074,760	\$0.003	\$9,224	0.371	\$3,422
	Customer Leak Repair	gallons	0	3,245,000	3,245,000	\$0.003	\$9,735	0.371	\$3,612
2027	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.003	\$15,999	0.350	\$5,599
	HE Toilet	gallons	0	3,074,760	3,074,760	\$0.003	\$9,224	0.350	\$3,228
	Customer Leak Repair	gallons	0	3,245,000	3,245,000	\$0.003	\$9,735	0.350	\$3,407
2028	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.003	\$15,999	0.331	\$5,296
03127249	HE Toilet	gallons	0	3,074,760	3,074,760	\$0.003	\$9,224	0.331	\$3,053
	Customer Leak Repair	gallons	0	3,245,000	3,245,000	\$0.003	\$9,735	0.331	\$3,222
2029	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.003	\$15,999	0.312	\$4,992
	HE Toilet	gallons	0	3,074,760	3,074,760	\$0.003	\$9,224	0.312	\$2,878
	Customer Leak Repair	gallons	0	3,245,000	3,245,000	\$0,003	\$9,735	0.312	\$3,037
2030	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.003	\$15,999	0.294	\$4,704
	HE Toilet	gallons	0	3,074,760	3,074,760	\$0.003	\$9,224	0.294	\$2,712
	Customer Leak Repair	gallons	0	3,245,000	3,245,000	\$0.003	\$9,735	0.294	\$2,862
2031	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.004	\$21,331	0.278	\$5,930
	HE Toilet	gallons	0	3,074,760	3,074,760	\$0.004	\$12,299	0.278	\$3,419
	Customer Leak Repair	gallons	0	3,245,000	3,245,000	\$0.004	\$12,980	0.278	\$3,608
2032	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.004	\$21,331	0.262	\$5,589
2033	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.004	\$21,331	0.247	\$5,269
2034	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.004	\$21,331	0.233	\$4,970
2035	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.004	\$21,331	0.220	\$4,693
2036	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.004	\$21,331	0.207	\$4,416
2037	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.004	\$21,331	0.196	\$4,181
2038	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.004	\$21,331	0.185	\$3,946
2039	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.004	\$21,331	0.174	\$3,712
2040	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.004	\$21,331	0.164	\$3,498
2040					£ 222 044	60.004	\$21,331	0.166	60 200
2041 oject Life	Turf Buyback	gallons	0	5,332,844	5,332,844	\$0.004	\$21,331	0.155	\$3,306

This table was calculated utilizing water savings only. Therefore, the without project category remains zero as without the project, there would be no annual water savings. We anticipate issuing half of the total rebates in 2011 and issuing the remaining rebates in 2012. Turf buy back calculations are based on a water savings of 22 gallons of water per square foot per year as indicated in The Handbook on Water Conservation, by Amy Vickers. (Estimated Turf Buyback rebates is 242,402 sq ft. Life is 30 yrs.) High Efficiency Toilets have an estimated water savings of 23.4 gallons per toilet per day for a single family residence based on the AWWARF Residential End Uses of Water Study, which is recognized by the CUWCC. (Estimated number of HE Toilet Rebates is 360. Life of HE Toilet is 20 yrs.) High Efficiency Clothes Washer water savings estimates are 5085.6 gallons per washer per year based on the BMP and Cost Savings Study prepared for the CUWCC. (Estimated number of HE Washer Rebates is 68. Life of HE Washer is 12 yrs.) The Customer Leak Repair water savings estimates are based on data from the Alliance for Water Efficiency. Water savings from leak repairs ranges from between 2,000 and 20,000 gallons per household per year. The calculation above is based on the mean of 11,000 gallons per year per household. (Estimated number of Customer Leak Repair Rebates is 295. Life is 20 yrs.) The Unit Value for water savings for the first 10 years of the project is \$0.002 per gallon, which is based on the average water production costs for the agencies participating in this project. We anticipate the water production cost to rise during the course of the project. We have estimated a cost of \$0.003 per gallon for years 11 through 20, and a cost of \$0.004 per gallon for years 21 through 30.

(Sum of the values in Column (j) for all Benefits shown in table)

Table 15. Total Water Supply Benefits
(All benefits should be in 2009 dollars)
Project: Project 5 - Water Conservation - South Tahoe Public Utility District (and other agencies)

Total Discounted Water Supply Benefits (a)	Total Discounted Avoided Project Costs (b)	Other Discounted Water Supply Benefits (c)	Total Present Value of Discounted Benefits (d) (a) + (c) or (b) + (c)
\$372,393.00			\$372,393.00
Comments:			

Table 12 - Annual Water Supply Benefits (All benefits are in 2009 dollars) Valley Creek Aquifor Interaction Project - Squaw V

(a)	Contract to the contract of th	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Year	Type of Benefit	Measure of Benefit	Without Project	With Project	Change Resulting from Project	Unit \$ Value	Annual \$ Value	Discount Factor	Discounted Benefits
		(Units)	MANUFACTURE OF THE PARTY OF THE		(e) - (d)		(f) x (g)	是但是言語	(h) x (i)
	No. of the Control of					(1)	(1)	(1)	(0)
2009	Property Tax Benefits to SVPSD	dollars	\$0	\$0	0		\$0	1.000	\$0 \$0
	Regional Increase in Visitor Expenditures Regional Increase in TOT	dollars dollars	0	0	0		\$0 \$0	1.000	\$0
	Regional increase in 101	donars					Paradia terra	1.000	30
2010	Property Tax Benefits to SVPSD	dollars	\$0	\$28,784	\$28,784	\$1	\$28,784	0.943	\$27,143
DATE AREA	Regional Increase in Visitor Expenditures	dollars	\$0	\$0	\$0	\$1	\$0	0.943	\$0
	Regional Increase in TOT	dollars	\$0	\$0	0	\$1	\$0	0.943	\$0
2011	Property Tax Benefits to SVPSD	dollars	\$0	\$534,478	\$534,478	\$1	\$534,478	0.890	\$475,685
2011	Regional Increase in Visitor Expenditures	dollars	\$0	\$24,280,256	\$24,280,256	\$1	\$24,280,256	0.890	\$21,609,428
	Regional Increase in TOT	dollars	\$0	\$753,000	\$753,000	\$1	\$753,000	0,890	\$670,170
	REASTREE OF THE PROPERTY OF THE PARTY OF THE		N/ASSESSED				TOTAL SERVICE PROPERTY.	THE SECOND SEC	
2012	Property Tax Benefits to SVPSD	dollars	\$0	\$564,132	\$564,132	\$1	\$564,132	0.840	\$473,871
	Regional Increase in Visitor Expenditures	dollars	\$0	\$24,280,256	\$24,280,256	\$1	\$24,280,256	0.840	\$20,395,415
	Regional Increase in TOT	dollars	\$0	\$753,000	\$753,000	\$1	\$753,000	0.840	\$632,520
2013	Property Tax Benefits to SVPSD	dollars	\$0	\$1,128,354	\$1,128,354	SI	\$1,128,354	0.792	\$893,657
2015	Regional Increase in Visitor Expenditures	dollars	\$0	\$48,560,513	\$48,560,513	S1	\$48,560,513	0.792	\$38,459,926
	Regional Increase in TOT	dollars	\$0	\$1,506,000	\$1,506,000	\$1	\$1,506,000	0.792	\$1,192,752
					Residence of	REPORT NAMED IN	Part Service		STATE OF STATE
2014	Property Tax Benefits to SVPSD	dollars	\$0	\$1,188,392	\$1,188,392	\$1	\$1,188,392	0.747	\$887,729
	Regional Increase in Visitor Expenditures	dollars	\$0	\$48,560,513	\$48,560,513	\$1	\$48,560,513	0.747	\$36,274,703
	Regional Increase in TOT	dollars	\$0	\$1,506,000	\$1,506,000	\$1	\$1,506,000	0.747	\$1,124,982
2015	Property Tax Benefits to SVPSD	dollars	\$0	\$1,964,813	\$1,964,813	\$1	\$1,964,813	0,705	\$1,385,193
MATERIAL PROPERTY.	Regional Increase in Visitor Expenditures	dollars	\$0	\$80,934,188	\$80,934,188	S1	\$80,934,188	0.705	\$57,058,602
	Regional Increase in TOT	dollars	\$0	\$2,510,000	\$2,510,000	\$1	\$2,510,000	0.705	\$1,769,550
ATTENDED IN	Warner of the Company	Section 1	Control (State of						
2016	Property Tax Benefits to SVPSD	dollars	\$0	\$2,027,569	\$2,027,569	\$1	\$2,027,569	0.665	\$1,348,334
	Regional Increase in Visitor Expenditures Regional Increase in TOT	dollars dollars	\$0 \$0	\$80,934,188 \$2,510,000	\$80,934,188 \$2,510,000	\$1 \$1	\$80,934,188 \$2,510,000	0.665	\$53,821,235 \$1,669,150
	Regional increase in 101	donars	20	32,310,000	32,310,000	31	32,310,000	0.003	31,009,130
2017	Property Tax Benefits to SVPSD	dollars	\$0	\$2,660,676	\$2,660,676	S1	\$2,660,676	0.627	\$1,668,244
	Regional Increase in Visitor Expenditures	dollars	\$0	\$105,214,444	\$105,214,444	\$1	\$105,214,444	0.627	\$65,969,456
Territor Tigal	Regional Increase in TOT	dollars	\$0	\$3,263,000	\$3,263,000	\$1	\$3,263,000	0.627	\$2,045,901
			GD and a control					R. Sandalina	
2018	Property Tax Benefits to SVPSD	dollars	\$0 \$0	\$2,726,289 \$105,214,444	\$2,726,289 \$105,214,444	\$1 \$1	\$2,726,289 \$105,214,444	0.592 0.592	\$1,613,963 \$62,286,951
	Regional Increase in Visitor Expenditures	dollars	20	\$105,214,444	\$105,214,444	31	5105,214,444	0.392	302,200,931
	Regional Increase in TOT	dollars	\$0	\$3,263,000	\$3,263,000	\$1	\$3,263,000	0.592	\$1,931,696
			BISTON CONTRACTOR			Maria Maria Cara	ROSE CONTRACTOR	AND THE PARTY OF THE	Newselfue
2019	Property Tax Benefits to SVPSD	dollars	\$0	\$3,396,973	\$3,396,973	\$1	\$3,396,973	0.558	\$1,895,511
	Regional Increase in Visitor Expenditures	dollars	\$0	\$129,494,700	\$129,494,700	\$1	\$129,494,700	0.558	\$72,258,043
19070	Regional Increase in TOT	dollars	\$0	\$4,016,000	\$4,016,000	\$1	\$4,016,000	0.558	\$2,240,928
2020	Property Tax Benefits to SVPSD	dollars	\$0	\$3,465,587	\$3,465,587	S1	\$3,465,587	0.527	\$1,826,364
	Regional Increase in Visitor Expenditures	dollars	\$0	\$129,494,700	\$129,494,700	\$1	\$129,494,700	0.527	\$68,243,707
	Regional Increase in TOT	dollars	\$0	\$4,016,000	\$4,016,000	\$1	\$4,016,000	0.527	\$2,116,432
Project Life									
	Beauty Branch and Charles Beat	A POST OF STREET			7.410	- AVAL - API-	and a Description Des	sed on Unit Value	#ED4 007 040

Total Present Value of Discounted Benefits Based on Unit Value (Sum of the values in Column (j) for all Benefits shown in table)

Comments:

Table 13 - Annual Costs of Avoided Projects (All avoided costs are in 2009 dollars) Project: Olympic Valley Creek Aquifer Interaction Project

		Costs			Discounting	Calculations
(a)	(b)	(c)	(d)	(e)	(f)	(g)
	Alternative (Avoided Pro Dioxide)	ject Name): Water Sup	ply & Treatment (Ma	inganese	Discount Factor	Discounted Costs (e) x (f)
	Avoided Project Descrip	tion:				
YEAR	Avoided Capital Costs	Avoided Replacement Costs	Avoided Operations and Maintenance Costs	Total Cost Avoided for Individual Alternatives (b) + (c) + (d)		
2009	\$4,105,500			4105500	1.000	\$4,105,500
2010		\$6,360	\$31,800	38160	0,943	\$35,985
2011		\$6,360	\$31,800	38160	0.890	\$33,962
2012		\$6,360	\$31,800	38160	0,840	\$32,054
2013		\$6,360	\$31,800	38160	0.792	\$30,223
2014		\$6,360	\$31,800	38160	0.747	\$28,506
2015		\$6,360	\$31,800	38160	0.705	\$26,903
2016		\$6,360	\$31,800	38160	0.665	\$25,376
2017		\$6,360	\$31,800	38160	0.627	\$23,926
2018		\$6,360	\$31,800	38160	0.592	\$22,591
2019		\$6,360	\$31,800	38160	0.558	\$21,293
2020		\$6,360	\$31,800	38160	0.527	\$20,110
Project Life				0		
			Tot		of Discounted Costs (Sum of Column (g))	\$4,406,430
		A Maria Caraca Cara			t Claimed by Project	92%
		esent Value of Discour (Total Present Value o				\$4,053,550

Source: Squaw Valley PSD, West Yost & Associates "Squaw Valley Groundwater Developemnt & Utilization Feasibility Study Update", August 2003 [1] Alternative Water Supply and Treatment Project Cost Estimate:

Item	Est. Cost, 2002\$	Update Factor	Est. Cost, 2009\$
2 MGD Water Treatment Plant for Iron &			
Maganese Removal	\$2,875,000	1.19	\$3,421,250
Total Construction Cost	\$2,875,000		\$3,421,250
Engineering, Legal & Admin @ 20%	\$575,000		\$684,250
Total Project Cost	\$3,450,000		\$4,105,500
	Est. Cost, 2006\$	Update Factor	Est. Cost, 2009\$
Admin Cost	\$6,000	1.06	\$6,360
O&M and Replacement	\$30,000	1.06	\$31,800

^[2] Based on April 5, 2006 Technical Memo on Water Treatment Plant Site and Process Evaluation, prepared by ECO:LOGIC Preliminary cost estimate of \$30,000 escalated by 3% per year.

Table 15. Total Water Supply Benefits (All benefits are in 2009 dollars) Project: Olympic Valley Creek/Aquifer Interaction Project

Total Discounted Water Supply Benefits (a)	Total Discounted Avoided Project Costs (b)	Other Discounted Water Supply Benefits (c)	Total Present Value of Discounted Benefits (d) (a) + (c) or (b) + (c)
\$524,267,240	\$4,053,550	\$0	\$524,267,240

Comments:

(All costs should be in 2009 Dollars)

ject: Project 7 - Bijou Creek Culvert Replacement Project - City of South Lake Taho

Control Cont		Initial Costs		ło	Operations and Maintenance Costs ⁽¹⁾	intenance Costs	(i)		Discounting	Discounting Calculations
Grand Total Cost From Table 7 (row 0), column(d)) Admin Admin Operation Maintenance Maintenan		(a)	(p)	(c)	(p)	(a)	(i)	(b)	(h)	0
\$5,039,711 \$0	YEAR	Grand Total Cost From Table 7 (row (i), column(d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a) ++ (f)	Discount Factor	Discountec Costs(g) x (f
\$0 \$0<	2009	\$3,039,711	80	0\$	80	80	80	\$3.039.711	1.000	\$3.039.711
80 80 80 80 80 80 680 80 80 80 80 80 680 680 80 80 80 80 80 80 680 680 80 80 80 80 80 80 80 6747 80 80 80 80 80 80 80 6747 80 80 80 80 80 80 80 6747 80 80 80 80 80 80 80 6747 80 80 80 80 80 80 80 80 80 80 <t< td=""><td>2010</td><td>80</td><td>80</td><td>0\$</td><td>\$0</td><td>80</td><td>\$0</td><td>\$0</td><td>0.943</td><td>80</td></t<>	2010	80	80	0\$	\$0	80	\$0	\$0	0.943	80
Store Store Store Store Store Store Store Control Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store Store	2011	- 80	80	80	\$0	80	80	80	0.890	80
Sign Sign Sign Sign Sign Sign G1792	2012	80	80	80	\$0	80	80	\$0	0.840	80
\$0 \$0<	2013	80	80	80	\$0	80	80	80	0.792	80
80 80 80 80 705 80 80 80 80 80 705 80 80 80 80 80 80 80 80 80 80 80 80 80 80 80 80 80 80 80 80 80 80 80 80 80 <td>2014</td> <td>\$0</td> <td>08</td> <td>80</td> <td>- \$0</td> <td>80</td> <td>80</td> <td>80</td> <td>0.747</td> <td>\$0</td>	2014	\$0	08	80	- \$0	80	80	80	0.747	\$0
Sign	2015	\$0	\$0	\$0	\$0	80	80	80	0.705	80
\$0 \$0<	2016	\$0	80	80	- 80	80	0\$	80	0.665	\$0
Story	2017	80	80	80	\$0	80	80	80	0.627	80
\$0 \$0<	2018	80	08	80	\$0	80	80	80	0.592	80
\$0 \$0<	2019	0\$	80	80	\$0	80	\$0	80	0.558	80
S0 S0 S0 S0 S0 S0 S0 S0	2020	80	80	80	\$0	80	80	80	0.527	80
80 80 80 80 80 60 0.469 80 80 80 80 80 0.442 80 80 80 80 80 0.442 80 80 80 80 80 0.417 80 80 80 80 80 0.344 80 80 80 80 80 0.371 80 80 80 80 80 0.371 80 80 80 80 80 0.331 80 80 80 80 80 0.234 80 80 80 80 80 0.234 80 80 80 80 80 0.234 80 80 80 80 80 0.244 80 80 80 80 80 0.244 80 80 80 80 80 0.244 80	2021	\$0	\$0	\$0	\$0	80	80	80	0.497	80
S0 S0 S0 S0 S0 S0 S0 S0	2022	80	\$0	\$0	\$0	80	80	80	0.469	\$0
80 \$0 \$0 \$0 \$0 \$0 \$17 80 \$0<	2023	80	80	80	\$0	\$0	80	80	0.442	80
\$0 \$0<	2024	80	80	80	\$0	\$0	\$0	\$0	0.417	0\$
\$0 \$0<	2025	\$0	\$0	80	\$0	80	80	80	0.394	80
\$0 \$0<	2026	80	\$0	\$0	\$0	80	80	- \$0	0.371	80
\$0 \$0<	2027	80	\$0	80	\$0	80	80	0\$	0.35	0\$
\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	2028	80	80	80	0\$	80	80	80	0.331	80
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hoject: Project 9 - Griff Creek Water Quality Improvements - Placer County

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roject: Project 10 - Bunker Water Tank Replacement - Tahoe Public Utility Distric

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		\$0	\$0	\$0	80	80	80	0.747	\$0
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		80	80	80	\$0	80	80	0.371	\$0
		80	80	0\$	80	80	80	0.35	80
		\$0	\$0	0\$	80	80	80	0.331	\$0
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Comments:									

Attachment 7

Project 10 - Bunker Water Tank Replacement - Tahoe City Public Utility District

Economic Analysis: Water Supply Costs and Benefits

The Tahoe City Public Utility District (TCPUD) Bunker Water Tank Replacement Project (BWTR) is a water supply enhancement project involving the replacement of a seismically unstable water storage tank with inherent leak issues as well as capacity deficiencies. The 0.5 Million Gallon tank was constructed in the 1950's and is of redwood construction. The tank has long suffered from leakage due to redwood construction issues, bird and animal damage and operation beyond its useful lifespan. A very recent seismic analysis has determined that the current tank does not meet current seismic codes. This fact along with other observed conditions has led to the recommendation of replacement of the tank. Lastly, the current capacity of 0.5 M has been determined to be inadequate to provide the water service area with proper fire flow storage and offers very little operational storage during peak demand months. Tahoe City Public Utility District is not the sole provider of water in the area, and additional capacity will also be required if consolidation or interconnections with other systems occur in the future.

Economic Costs

The economic costs associated with the BWTR are established in Table 7. At this time there are no known opportunity costs, as the project has not had any notable costs to date. Economic costs will include:

Direct Project Administration Costs: These costs were limited to 5% of the total grant

request for the BWTR.

Land Purchase/Easement: No costs associated with this item anticipated.

Planning/Design/Engineering/ Environmental Documentation:

Costs for this category will include preliminary design work, CEQA and NEPA documentation, engineering design work, plans and specification preparation, and bid document preparation.

Construction/Implementation: Costs for this category will include physical costs

for constructing and completing the project.

Environmental Compliance/Mitigation/

Enhancement:

Costs for this category will include potential land coverage mitigation costs, and site and access erosion control enhancements and access road

improvements.

Construction Administration: Costs for this category include construction

inspection, construction contract administration, contractor billing, change order administration and

project close out procedures

Other Costs: Costs for this category include any legal support for

the project, and any monitoring or assessment

required during construction or initial implementation. One example may include archeological inspections during excavation.

Construction/Implementation

Contingency: Costs in this category include any construction

items unforeseen during the planning and design phase, additional work due to site conditions or archeological concerns. A 10% contingency was

used for this category.

Water Supply Benefits

Avoided Water Supply Projects:

Conservation: Water conservation strategies, specifically elimination of real losses have long been used to add system capacity and avoid future source projects. The BWTR will eliminate significant real water losses due to the current age and condition of the existing tank. Current estimates indicate that water loss of 3-5 MG will be eliminated annually which accounts for approximately 1-2% of the entire production for the system. Although not significant, considering this loss is identified from one facility highlights the need to be corrected. Furthermore, reduction of system real losses increases the beneficial use of overall water produced. The primary focus of this benefit is local, and beneficiaries would include local tax and rate payers. There is very little uncertainty with this benefit as the reduction in water loss is very achievable and immediately received upon completion of the BWTR project. No adverse effects are noted in achieving this benefit. Cost benefits are calculable for this benefit and are included in Table 12.

Consolidation or Interconnection: The TCPUD water system served by the existing Bunker Tank only serves approximately 60% of the connections that are within the capability of being served by the current tank location. The additional 40% of service connections are served primarily by privately owned or mutually owned water purveyors. It is likely that over the next 10-20 years many of these systems will seek consolidation or interconnection with the TCPUD. Many of these systems lack necessary storage and/or backup source capabilities. It is estimated that consolidation or interconnection to TCPUD after the construction of the BWTR will eliminate the need for four individual source projects and two storage projects. The cost of each system individually addressing these needs will likely exceed the cost of the BWTR. The BWTR will be sized to accommodate these anticipated future connections thus eliminating the need for several individual and isolated system improvements to accommodate interconnection or consolidation. This benefit has a local focus but also includes regional benefits due to possible consolidation of water systems under one government agency. There is a level of uncertainty to this benefit because when consolidations or interconnections occur is not readily known. However, history has indicated this trend and it is likely to continue in the coming years, especially as increased regulatory costs to water systems will eventually outweigh the profitability and expertise of many private water system owners. In addition, many regulators have strong positive opinions on the benefits of consolidation or interconnection. No adverse effects are noted in achieving this benefit. Cost benefits are calculable for this benefit and are included in Table 12.

Water Supply Reliability:

Seismic Failure: It has been determined through a technical study that the existing Bunker Water Tank is not constructed to withstand seismic events as defined by existing codes. Failure of the Bunker Water Tank due to a seismic event will have several ramifications including property and environmental damage, but more importantly will compromise the TCPUD's ability to deliver safe and sufficient water supply for an extended period of time. Storage tanks damaged by a seismic event are typically not easily repaired or placed back into service in a timely fashion. Therefore, it is imperative that a storage facility be designed to withstand natural disasters and environmental conditions prevalent in the area. The primary focus of this benefit is local, and beneficiaries would include local tax and rate payers. Whether or not a seismic event, sufficient in magnitude to damage the existing water tank, will occur is clearly uncertain. However, certainty is typically not the basis for seismic design codes and should not apply to this benefit. No adverse effects are noted in achieving this benefit. Cost benefits are not calculable for this benefit.

Fire Suppression: The Lake Tahoe basin has experienced several wildland fires in the last ten years which continue to point out the need for water supply reliability to include adequate fire suppression storage. Finding 18 of "The Emergency California-Nevada Tahoe Basin Fire Commission Report", May 2008 clearly supports the need for enhanced fire flow. Adequate fire suppression storage enhances the ability to mitigate structure fires before they can spread to the wildland, and can also assist in protecting residential neighborhoods from encroaching wildland fires. Gravity storage of fire suppression water is far more reliable and cost effective than constructing additional source capacity or emergency source capacity due to the possibility of mechanical failure and due to long term operation and maintenance costs of source projects. This benefit has a local focus but also includes regional benefits due to the potential mitigation of wildland fire threats as well as environmental and property damage reduction. Private, state and federal lands all stand to benefit from a reduction in wildland fire potential. Similar to seismic events, whether or not a fire event sufficient in magnitude to require the added storage contemplated in the BWTR is clearly uncertain. However, certainty is typically not the basis for fire codes and should not apply to this benefit. No adverse effects are noted in achieving this benefit. Cost benefits are not calculable for this benefit.

Avoided Operation and Maintenance Costs:

- Decreased costs due to reduction in system loss
- Eliminate redundant facilities operated by multiple purveyors
- Minimize long term O&M costs associated with additional sources
- Minimize regional O&M costs associated with other water system projects

Tahoe Sierra IRWMP

Attachment #8

Water Quality and Other Expected Benefits